

August 28, 1975

## BEACH CONSERVATION



Ed Leary, Tremont St., has a B.S. degree granted by UMass., Amherst, School of Forestry. This is his first season as a member of our beach conservation team. Eventually he plans permanent employment in the professional forestry field.

### BEACH PLANT SUCCESSION

By Ed Leary

Succession is the displacement of one community of plants by another in an orderly and predictable manner. The plants of each successional stage, whether they be grasses, shrubs or trees, cause changes in amounts of sunlight received, wind velocity, and temperature, as well as in the structure, depth, moisture and fertility of the soil. These changes result in the replacement of the previous stage by another better adapted to the modified environment.

A fine example of sand dune succession, beyond the primary stage - that which occurs on an area not previously occupied by a plant community, can be found on Duxbury Beach in the region known as High Pines. The more advanced types of vegetation, or those higher up on the evolutionary scale are found here due to the area's distance from the water and a somewhat higher elevation than the surrounding

beach. These 2 factors offer some protection from the full force of winter storms. Another reason for the existence of this more developed vegetation is due to the fact that in order to be able to survive away from the open, direct sunlight near the water, the plants must be the type that are able to grow bigger and taller than those around them. This is one reason for the variation in plant species on different beach locations.

Shifting sand dunes are first anchored in place by various beach grass species. Also included in this primary vegetation is wild beach peas, ragweed, curled dock, and mullien. The succession from barren dune sand to a pine forest or some other terminal vegetation stage requires about 1000 years after the initial stabilization, during which the litter of the developing vegetation continually improves the soil. Under rare circumstances, sand dunes may develop into mature vegetation-supporting soil within a few decades. The changes and improvements slow down with time, however, so that there seems to be little prospect for continued change toward a more temperate forest of a better soil after this time.

The secondary stage comes along after this initial stabilization, with the introduction of wild rose hips, red raspberries, wild strawberries, and bayberry, the first true woody plant to be introduced.

High Pines is now at its final phase, where many commonly known true trees can be found. Among them are choke cherry, much Eastern redcedar, from which the area might have received its name, shadbush, Atlantic white cedar and juniper.

Thus it can be seen that different stages of plant development are evident on Duxbury Beach, and all have the possibility of reaching the height which has been achieved at High Pines if the dune stabilization, restoration and grass planting and fertilizing are continued and care is taken to protect the completed work and allow nature to do its share with our assistance.